



(43) International Publication Date
15 April 2004 (15.04.2004)

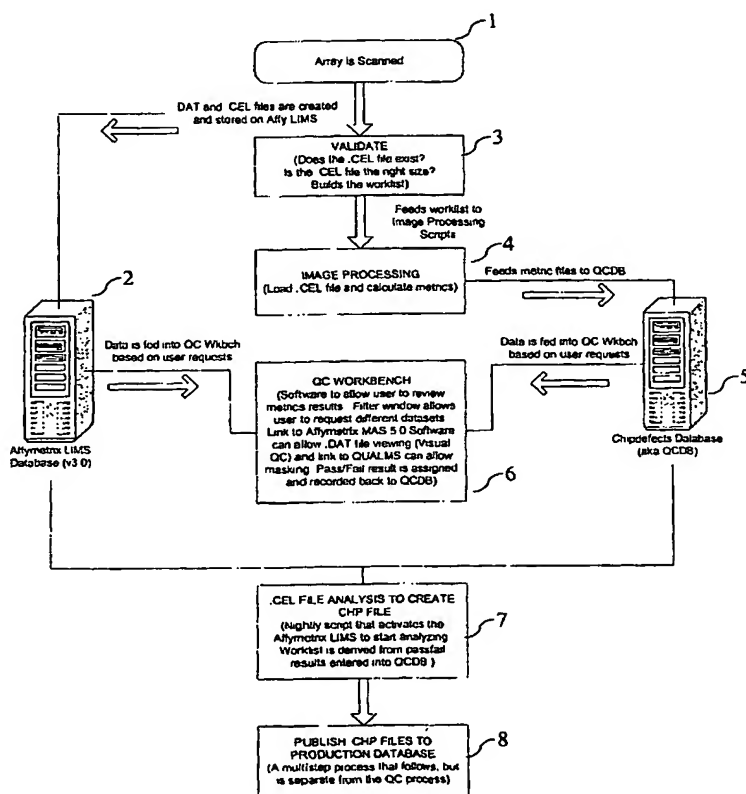
PCT

(10) International Publication Number
WO 2004/031885 A3

- | | |
|--|---|
| <p>(51) International Patent Classification⁷: G06K 9/00</p> <p>(21) International Application Number:
PCT/US2003/024160</p> <p>(22) International Filing Date: 1 August 2003 (01.08.2003)</p> <p>(25) Filing Language: English</p> <p>(26) Publication Language: English</p> <p>(30) Priority Data:
60/399,727 1 August 2002 (01.08.2002) US</p> <p>(71) Applicant (for all designated States except US): GENE LOGIC INC. [US/US]; 708 Quince Orchard Road, Gaithersburg, MD 20878 (US).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): ELASHOFF,</p> | <p>Michael [US/US]; 11124 Yellow Leaf Way, Germantown, MD 20876 (US). ALVARES, Chris [US/US]; 7547 Heatherton Lane, Potomac, MD 20854 (US). LAUREN, Peter [US/US]; 10058 Quantrell Row, Columbia, MD 21066 (US).</p> <p>(74) Agents: PRATT, John, S. et al.; Kilpatrick Stockton LLP, Suite 2800, 1100 Peachtree Street, Atlanta, GA 30309-2043 (US).</p> <p>(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.</p> <p>(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),</p> |
|--|---|

[Continued on next page]

- (54) Title: METHOD AND SYSTEM FOR MANAGING AND QUERYING GENE EXPRESSION DATA ACCORDING TO QUALITY**



(57) Abstract: An automated system and method are provided for analyzing gene expression data obtained from a plurality of microarrays having mismatch (MM) probe pairs and perfect match (PM) probe pairs. Image data for a plurality of scanned microarrays (1) is stored in a database (2) along with a set of microarray parameters which includes one or more image processing metrics (4) for quality control (6) of the microarray and a pass/fail status of the microarray as determined by these metrics. The user can search the database records (2) according to one or more microarray parameters. The image processing metrics (4) include algorithms for removing local background effects from the probe measurements by determining a model for estimated background using PM probe values. Other image processing metrics utilize a modified Robust Multi-array Averaging (RMA) applied to PM probes to assign weights to probes for determining overall quality of a microarray.



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments*

Declaration under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii)) for all designations*

Published:

— *with international search report*

(88) Date of publication of the international search report:
16 September 2004

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

01 FEB 2005

10/523499

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/24160

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06K 9/00

US CL : 129

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 382/128, 129, 262, 274, 275, 305

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST, IEEE, SPIE, ACM, ProQuest, CiteSeer, ResearchDisclosure

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
AP	US 2003/0028501 A1 (BALABAN et al.) 06 February 2003 (06.02.2003), figure 1, paragraphs 33-37, 42 and 45.	1-18
AP	US 2003/0124589 A1 (PIPER) 03 July 2003 (03.07.2003), figures 1 and 4, paragraphs 94 and 95.	1-18
AP	US 2003/0093227 A1 (STOUGHTON et al.) 15 May 2003 (15.05.2003), paragraphs 59, 63, 65, 87, 93, 98 and 104-110.	19-26
AP	US 2002/0110267 A1 (BROWN et al.) 15 August 2002 (15.08.2002), paragraphs 4, 10, 21, 49 and 57.	19-26
YP		2-9, 11-18
YE	US 2004/0019466 A1 (MINOR et al.) 29 January 2004 (29.01.2004), figure 10, paragraphs 116 and 126-132	1-18
YE	US 2003/0171876 A1 (MARKOWITZ et al.) 11 September 2003 (11.09.2003), figures 1-4, paragraphs 28, 42-45, 58, 60-67, 114, 118, 177, 184-190 and 205.	1-18
YP	US 2003/0099973 A1 (WANG et al.) 29 May 2003 (29.05.2003), figures 2-4 and 7B, paragraphs 39, 40, 49-51 and 66.	1-18

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

09 June 2004 (09.06.2004)

Date of mailing of the international search report

07 JUL 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Brian P. Werner

Telephone No. 703-305-4750